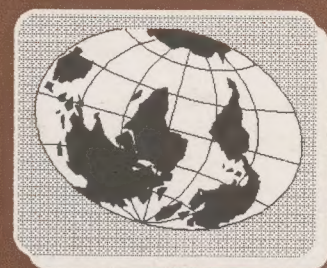


Bob Cooper's

JUNE 15 1995

SatFACTS

MONTHLY



Reporting on "The World" of satellite television in the Pacific Ocean Region

IN THIS ISSUE

30cm C-band Dishes?

Russia's Express
Class satellites
are coming to an
orbit spot near you!

SMATV:

Redesigning the motel
distribution system for
addition of
satellite channels

TNT & MTV Decide

Same encryption
format chosen
by two of the
"big" programmers

✓ Latest programmer news

✓ Latest satellite
operations

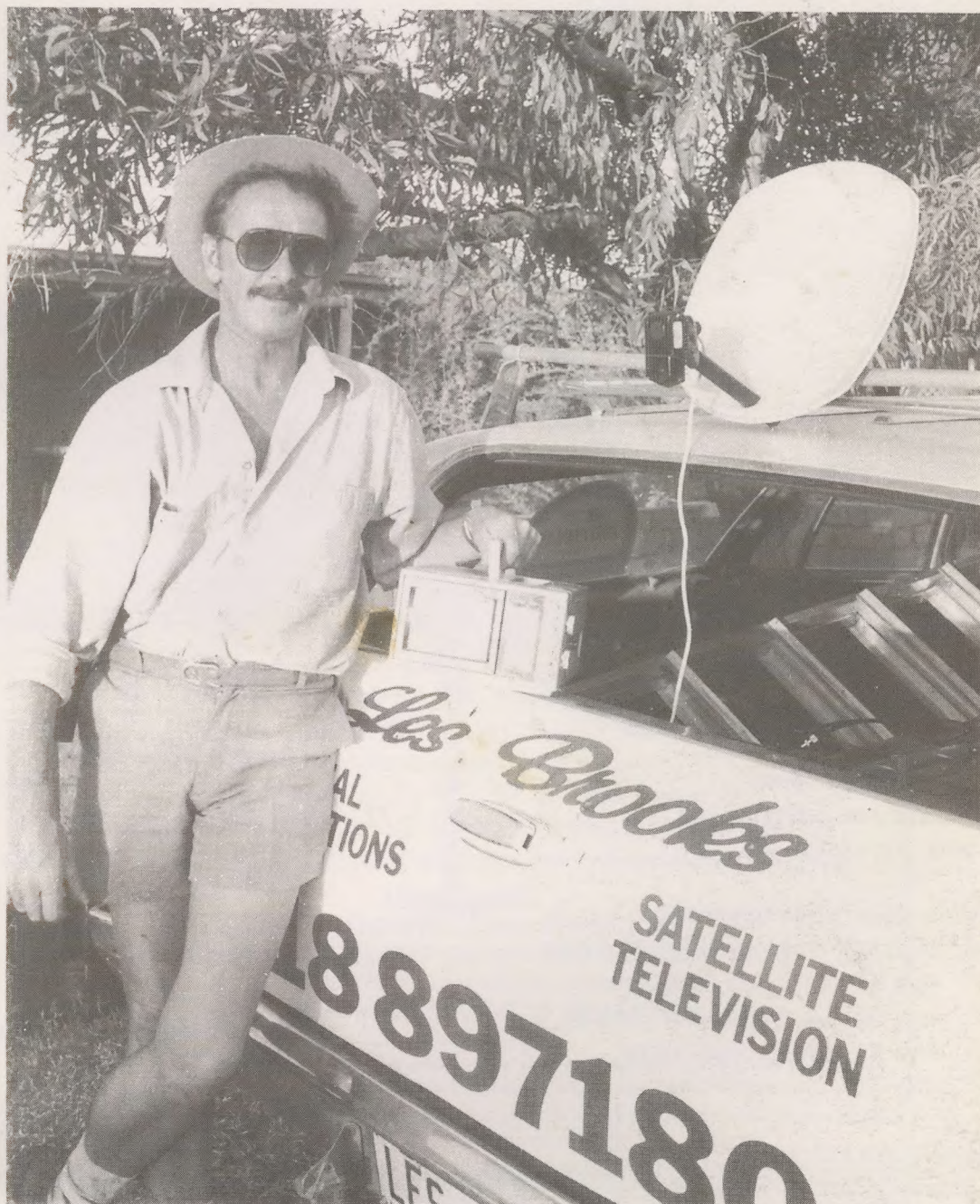
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SatFACTS

MONTHLY

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COOP'S COMMENT

Ivan Staites of Staites Television & Video (Palmerston North, NZ) stopped by to see me early in June.

"When will we have satellite television?" he asked. The man was standing in my work area surrounded by racks of satellite receivers; an NBA semi-final basketball game was on the screen, live from Houston. To get into my room he had to pass by 4 operational satellite dishes in my yard.

I assured him it is here, now.

"But when can I sell dish systems?" he pressed.

I suggested, "Today would be a good day." Ivan is not unique; unfortunately, he is 'standard'. He believes that satellite TV "will be here" the day he can spend a few hours installing a dish, running some wires and connecting up a receiver that displays channels people do not otherwise have access to. Ivan is afraid of the unknown, worried because satellite TV seems different from terrestrial TV. It is, and, it is not.

Satellite TV differs only in delivery technique; it uses frequencies that are new to the trained terrestrial TV installer, equipment that is foreign in design, modulation that is unusual. Once you learn your way through these differences, the pictures on the screen and the sound from the speaker(s) are just like 'standard' (terrestrial) TV. Ivan worries about those differences; his customers will not. They will only care about the programming choices.

Satellite TV is here; now. It is here for those banks, stock market houses, and investors who crave accurate up to the minute information on market trends. For these people, satellite TV is Asia Business News (see page 23, here). How many businesses or people in your retail territory would spend \$5,000 for this service? You won't know until you start asking. Satellite TV is here, now, for pubs and bars and sporting clubs that crave more sports (EMTV), current music (MTV) and country and western music (CMT). Satellite TV is here now for the Japanese management people at the fishery or timber mill (NHK); for the Chinese restaurant owner (CTN), for the Indian shop keeper (ATN, RAJ). And before this month is out, satellite TV will be here for movie buffs who want 5 movies a night (TNT).

Look about you, Ivan. Satellite TV is all around us. If you are not yet selling it, perhaps it is time you figured out why!



June 15, 1995

In Volume 1 ♦ Number 10

30cm DISHES on C-BAND?

The Russian Express Satellite Story (page 2)

REBUILDING MATV for satellites / part 3 (page 7)

NEIGHBOURHOOD CABLE: Power to the people / part 4 (page 10)

PROGRAMMING TRENDS: ABN and programme information access (page 23)

Departments

The Satellite Novice (Types of feeds) -p.14

SPACE Notes (TNT, MTV encryption and marketing) -p.16

DATA Sheet (programmer sources, contacts) -p.18

With The Observers -p.20, SatFACTS Orbit Watch -p.24

-ON THE COVER-

When Les Brooks migrated to Alice Springs, Australia several years ago, he had no idea his 35cm Ku band UK dish left over from the Marco Polo satellite project days could ever be more than a hood ornament for his vehicle. Now, it produces Asian Business News and other programmes from PAS-2 (see p.23). *Welcome, Alice Springs, to the 21st century!*

EXPRESS : SUPER POWER BIRDS

In a satellite direct world where signal power levels on the ground is money in the bank, satellite designers have since the first 1970 era 5 watt C-band transponders gradually increased power to the 34 watt power of the current PAS-2 and the 55 watt power of the new AsiaSat 2. Putting more transmitter power on the satellite has two effects:

More transmit power translates to smaller receive dishes;

More transmit power can also translate to larger coverage areas on the ground.

Russia's Gorizont family of satellites, now into their third decade, pioneered high power on C-band, but at a price. Gorizont satellites employ circular polarisation and this means they 'pollute' linear satellites on both sides (in the two immediately adjacent orbit locations). A linear system next to a circular system can do nothing to "tune out" the presence of the circular signal splattering in from the side of the dish focal point. Additionally, Gorizont satellites were not designed to be long-lasting in orbit, nor to be geostationary. By flying the birds in an inclined orbit the "splatter effects" of the circular signals on the linear signals "next door" seem to come and go at the linear sites. For example,

Gorizont at 103.2E is a source of intermittent interference to AsiaSat 1 at 104.3E.

Parking space in the satellite belt is at a premium; it will grow more congested and there will be new confrontations. In North America and Europe congested orbit belts are 'managed' by careful satellite placement and careful control of polarisation. Satellites on C-band can in fact share the belt at 2 degree spacing but only when polarisations are 'meshed'; on side by side satellites use of a common transponder frequency involves using opposite polarities. Russian high power circular C-band satellites, which radiate simultaneous signals in both linear polarisations, could not take part in this plan.

Now - stand back because as powerful as the Russian Gorizonts have been in the past, here come the Express Class 'super-power' C-band birds.

Transmitter power alone is not a problem. An equally important design criteria is the type of transmit antenna "coverage pattern" the satellite will employ. Russian satellites routinely employ:

Global beams (goes to every point on earth the satellite can "see")

Spot beams (most of the transmit power focuses into a narrow [typically 5 degree wide by 5 degree 'high'] area)

Zone beams (a cross between Global and spot with the transmit power focused on an area that may be 10 degrees wide by 5 degrees high)

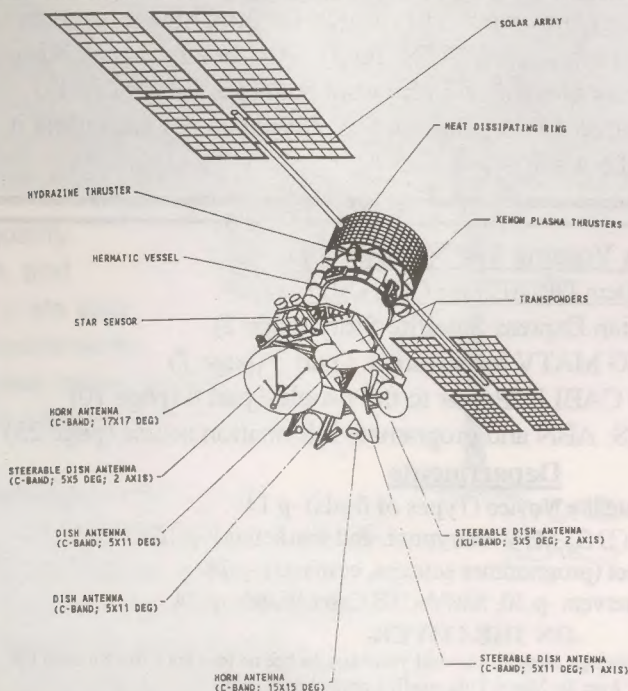
The spot and zone beams can be 'steered' (made to point by design to a particular region on earth). Express beams can be steered by remote control from earth; a spot beam today on New Zealand, tomorrow it points at Malaysia. In practice, they will be steered initially after the satellite achieves orbit position and left in the selected position unless the needs of the satellite customers change.

Gorizont vs. Express Comparison

✓ Gorizonts have 1 Ku and 6 C-band transponders on board. Express have double this: 12 C and 2 Ku

✓ Gorizonts have a useful lifetime of 3 years; Express customers are being warranted 5 years as a minimum, up to 7.

✓ Gorizonts are launched with an inclined orbit built in (SF#8, p.6); Express are designed to be geostationary



EXPRESS in-orbit configuration

for their lifetime (and this will end the tracking problem).

✓ Gorizonts have built-in coverage beams that cannot be routinely changed once the satellite achieves orbit; Express can be switched at will.

✓ Gorizonts employ left hand circular (LHC) C-band transmit polarisation; Express will employ right hand circular (RHC). On Ku, Gorizont is horizontal linear while Express is vertical linear.

Thus a Gorizont and an Express could be positioned within 2 degrees of one another simply because they are using opposite polarisation 'senses'. But like the Gorizonts, a 'western world' linear polarised satellite had better be at least 2.5 degrees removed in space from either of them on C-band!

Practical Coverage Data

In the multiple maps with this analysis you should keep in mind the following numbers:

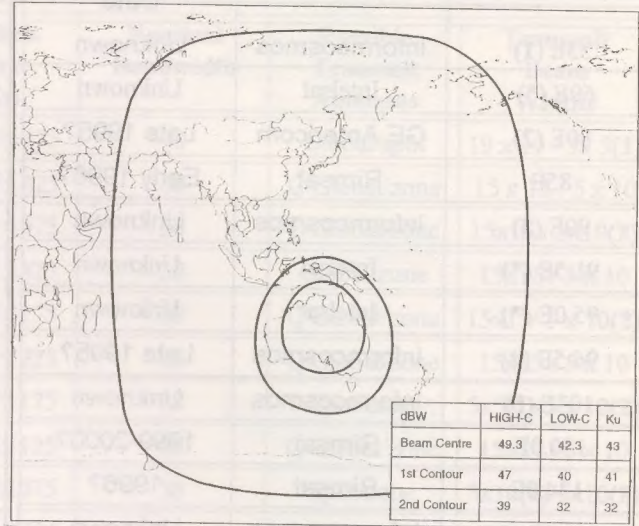
Each map has a set of semi-circular contours shown. The smallest 'circle', in the centre when there are two or more shown, is the strongest signal area. Each map has a lower right inset table telling you just how strong the inner circle ("Beam Center") will be, a next-out circle ("1st Contour"), a next-next out ("2nd contour") and on some maps an additional contour circle ("3rd contour").

By covering all of the earth that the satellite can 'see' (i.e., Global beam) the power available for that transponder is spread thinly over approximately 42% of the earth's surface. This is what we have with Rimsat G1 (130E on the RAJ-TV transponder R6; SF#8, p.3). The power level for each type of beam, vs. dish size on the ground, is shown here in table form.

Find a location on earth and determine the EIRP (on ground signal level contour). Go to this chart and determine the size dish required for either analogue or digital format transmissions. Note that the spot and zone beams shown are examples of those that could be steered to a wide variety of locations by command. Absence, here, of a map showing a spot covering

Express EIRP	Analogue C-band Dish Size	Digital C-band Dish Size
49 dBw	0.25m	<0.25m
47 dBw	0.3m	<0.3m
42 dBw	0.8m	<0.8m
40 dBw	0.9m	<0.9m
38 dBw	1.1m	1.0m
36 dBw	1.5m	1.3m
34 dBw	2.1m	1.8m
32 dBw	2.5m	2.1m
30 dBw	3.1m	2.6m
27 dBw	3.9m	3.1m

ASIA-PACIFIC EXPRESS (134°E)



RIMSAT Express at 134E: One possible spot beam

another portion of the world does not mean it is not available. In theory, a spot can be steered to almost any location within the outer-most (Global) pattern, and, some zone beams likewise.

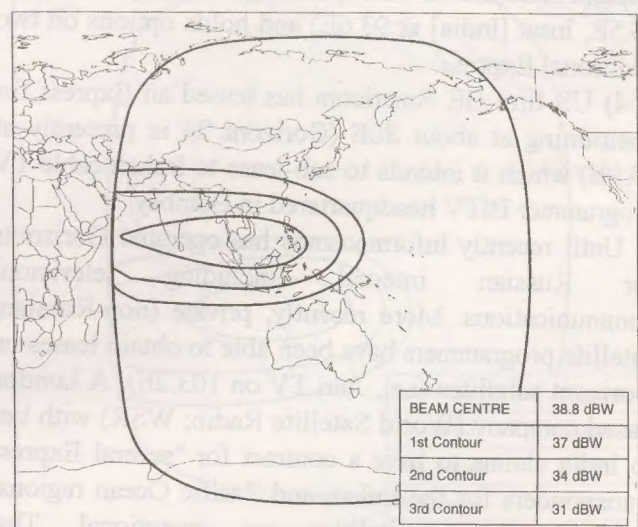
Who Will Use Express Class?

At this point in time we have four intended users of Express:

1) The Russians themselves, as a part of their international telecommunications strategy, presently operate 10 Gorizonts and two Ekran-M class satellites. Ultimately, Express will replace the Gorizonts and Informcosmos (a Russian company formed in 1993) operates these satellites.

2) Rimsat which holds a contract with Informcosmos covering 4 Express satellites.

ASIA-PACIFIC EXPRESS (134°E)



RIMSAT Express at 134E: One possible zone beam

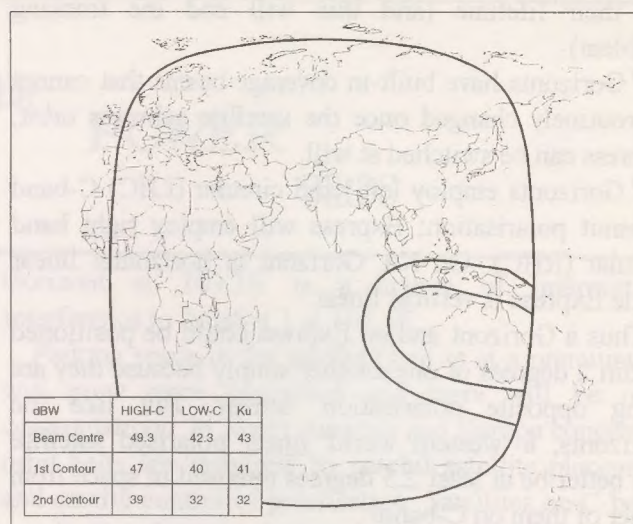
Location	Operator	Likely Launch Date
53E (1)	Informcosmos	Unknown
69E (*)	Intelsat	Unknown
80E (2)	GE Americom	Late 1995?
85E	Rimsat	Early 1996?
90E (3)	Informcosmos	Unknown
91.5E (*)	Intelsat	Unknown
95.0E (*)	Intelsat	Unknown
96.5E (4)	Informcosmos	Late 1995?
103E (5)	Informcosmos	Unknown
130.0E	Rimsat	1999-2000?
134.0E	Rimsat	1996?
140.0E (6)	Informcosmos	Unknown
145.0E (7)	Sovcan Star	Unknown
170.75E (8)	Rimsat	Unknown

1/ Gorizont 27 presently at 52.8E
 2/ Gorizont 24 presently at 79.9E
 3/ Gorizont 28 presently at 89.9E
 4/ Gorizont 19 presently at 96.5E
 5/ Gorizont 25 presently at 103.2E
 6/ Gorizont 18 presently at 140.2E
 7/ Gorizont 21 presently at 144.4E; Sovcan is joint CIS and Canadian consortium
 8/ 170.75E may not be formally recognised as an orbit location for Rimsat by PanAmSat, others. If an Express goes here, PAS-2 could suffer badly.
 * / Intelsat has not announced the location for their first or subsequent Express satellites; these are the most likely candidate locations.

3) Intelsat has signed an agreement to lease an Express satellite at 95E (Gorizont 19 is presently at 96.5E, Insat [India] at 93.6E) and holds options on two additional Express.

4) US firm GE Americom has leased an Express for positioning at about 80E (Gorizont 24 is presently at 79.9E) which it intends to sub-lease to Indian cable TV programmer BITV headquartered in Bombay.

Until recently Informcosmos has operated Gorizonts for Russian internal (including television) communications. More recently, private (non-Russian) satellite programmers have been able to obtain leases on Gorizont satellites (i.e., Jain TV on 103.2E). A London based company (World Satellite Radio; WSR) with ties to India claims to have a contract for "several Express transponders for the Indian and Pacific Ocean regions" when the new satellites are operational. That Informcosmos will rent out C and Ku band satellite



EXPRESS at approximately 75E: possible spot beam

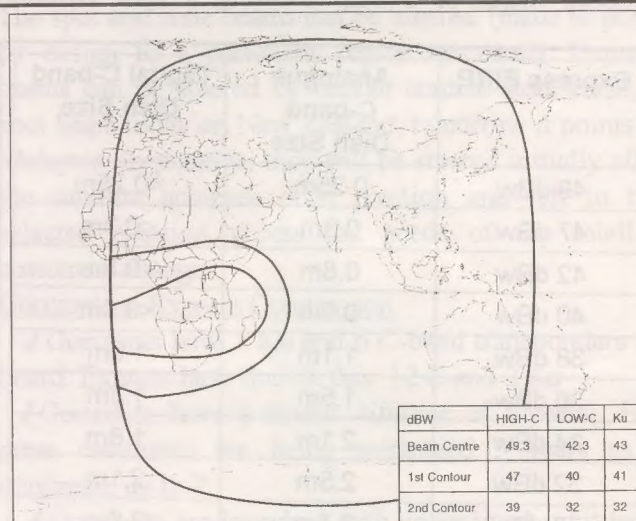
transponders on the Express seems to be accepted by all of the major satellite players.

Where Will The Express Satellites Be Located?

Present plans call for Express satellites to be located at 6 Informcosmos locations in the Indian and Pacific regions, plus 1 GE Americom and as many as 4 Rimsat. We show where they are intended in a table here. Of course this sort of planning is subject to modification as transponder needs change and markets develop. Informcosmos, once a giant government bureaucracy administered by the Russian Space Agency, is now doing its best to adapt to western ways; including the Russian need to generate foreign currency earnings. Gorizont transponder space is leased out for US dollars, a tidy system of insuring a monthly inflow of this currency so vital to Russia's foreign trade balancing act.

TECHNICAL DETAILS: Express Class

Express are launched by the proven Proton vehicle. Express is 3-axis stabilised, the same as PAS-2 or AsiaSat 2. Once at orbital location the satellite tracking



EXPRESS at approximately 75E: possible spot beam

EXPRESS 'CLASS' TECHNICAL SPECIFICATIONS

Transponder	Band	Power	Downlink Centre (MHz)	Nominal Bandwidth	Possible Transmit Antennas	Transmit Beam Widths
R6	C	75 watts	3675 / IF:1475	40	Global/spot	19 x 19 / 5x 5(1)
R7	C	15	3725 / IF:1425	38	Q'Global/zone	15 x 15 / 5 x 10
R8	C	15	3775 / IF:1375	38	Q'Global/zone	15x15 / 5x10(2)
R9	C	15	3825 / IF:1325	38	Global/zone	15x15 / 5 x 10
R10	C	15	3875 / IF:1275	38	Q'Global/zone	15x15/ 5 x 10(2)
R11	C	15	3925 / IF:1225	38	Q'Global/zone	15x15 / 5 x 10
R14	C	15	3975 / IF:1175	38	Spot/zone	5x5(1)/5 x 10(2)
R15	C	15	4025 / IF:1125	38	Q'Global/zone	15x15 / 5 x 10
R16	C	15	4075 / IF:1075	38	Spot/zone	5x10(1)/5x10(2)
R17	C	15	4125 / IF: 1025	38	Q'Global/zone	15x15 / 5 x 10
R12	Ku	20	11525/IF: 1225	38	Spot	5 x 5 (3)
R20	Ku	20	11625/IF:1325	38	Spot	5 x 5 (3)

1/ 5 degree x 5 degree C-band spot beam steerable east-west and north-south. 2/ Zone beams on R8, R10, R14, R16 are steerable E-W +/- 4 degrees, N-S +/- 7 degrees. 3/ Ku spot steerable E-W, N-S +/- 7 degrees.

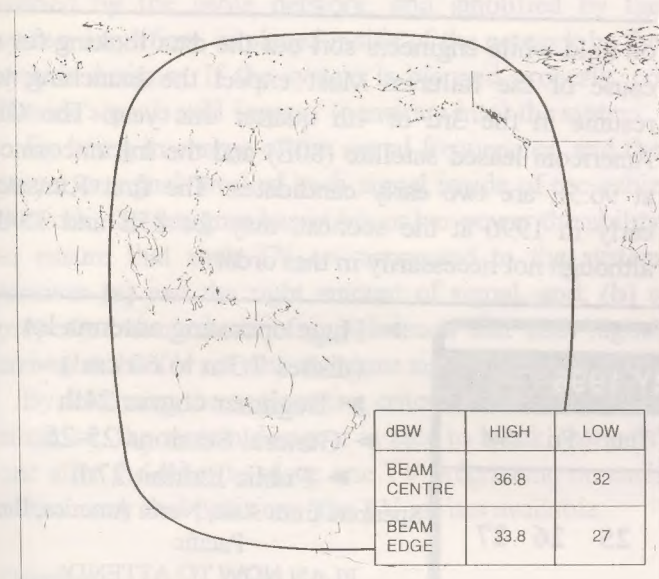
and control information (TT&C) is internally recorded and 'dumped' to ground controllers on command at 10 to 30 day intervals. If the satellite exceeds its nominal geostationary assignment parameters (i.e., wanders), internal alarms immediately alert TT&C stations that nominally 'fly' the satellites. Command systems allow instructions from the ground to switch transponders to different transmit (or receive) antennas, each with a different 'coverage pattern'. The satellite's in-orbit stability is +/- 0.1 degrees (0.2 degrees total movement) for latitude, longitude and 'orientation' (where it points for boresight). The expected service life is 5-7 years.

In the coverage maps here, note the following:

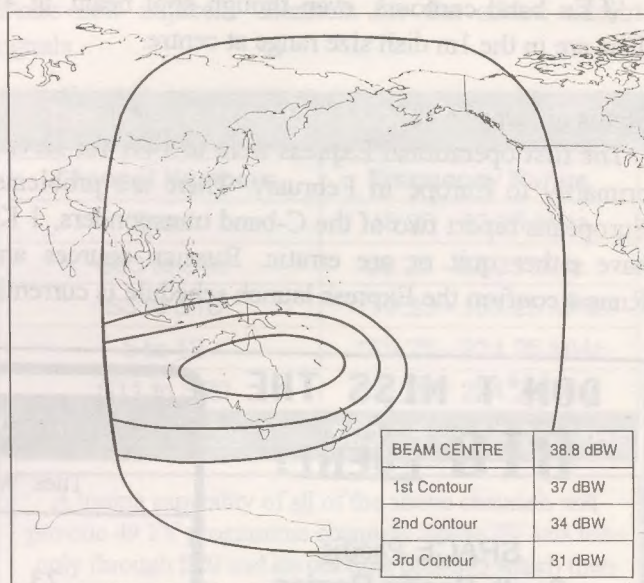
✓ On R6 the Global beam centre (for all locations) is 36.8 dBw in high power (full 75 watts), or 32 dBw in low power (15 watts). At beam edge (the outer ring for a Global coverage map) the footprint will be 33.8 dBw for high power and 27 dBw for low power. For transponders R7-11, 15 and 17, the Quasiglobal centre is typically 32 dBw while the edge of coverage is typically 29 dBw.

✓ On R6 the spot is 49.3 dBw (!) at centre.

PACIFIC EXPRESS (170.75°E)



RIMSAT Express 170.75E: Global footprint



RIMSAT Express: 170.75E Possible Zone Beam

Transponder	Transmit Beam	Maximum EIRP
R6	Global	36.7 dBw
	Spot	49.3 dBw
R7	Quasiglobal	31.6 dBw
	Zone	38.5 dBw
R8	Quasiglobal	31.7 dBw
	Zone	38.6 dBw
R9	Quasiglobal	31.8 dBw
	Zone	38.7 dBw
R10	Quasiglobal	31.9 dBw
	Zone	38.8 dBw
R11	Quasiglobal	32.0 dBw
	Zone	38.9 dBw
R14	Spot	42.3 dBw
	Zone	39.0 dBw
R15	Quasiglobal	32.2 dBw
	Zone	39.1 dBw
R16	Spot	42.4 dBw
	Zone	39.2 dBw
R17	Quasiglobal	32.4 dBw
	Zone	39.3 dBw
R12	Spot	42.9 dBw
R20	Spot	42.9 dBw

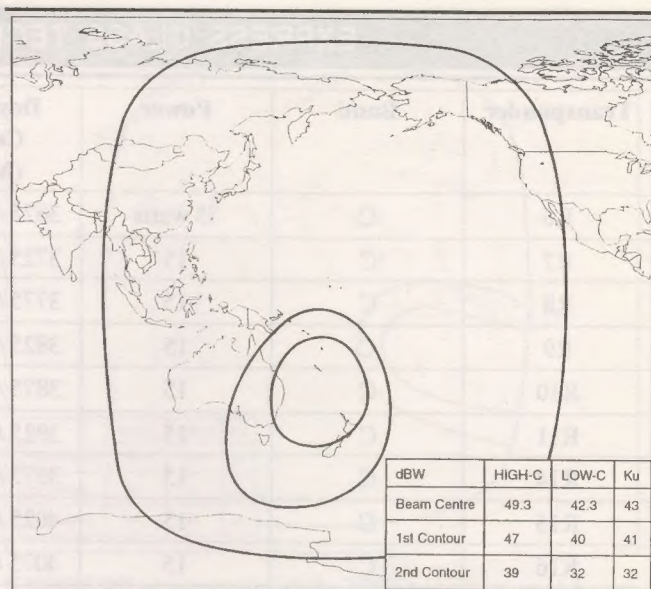
Spot indicates steerable beam

✓ Zone coverage is 38.6(8+) dBw at centre dropping to around 31 dBw by the third contour on the map. Outside of the third contour, signals drop rapidly.

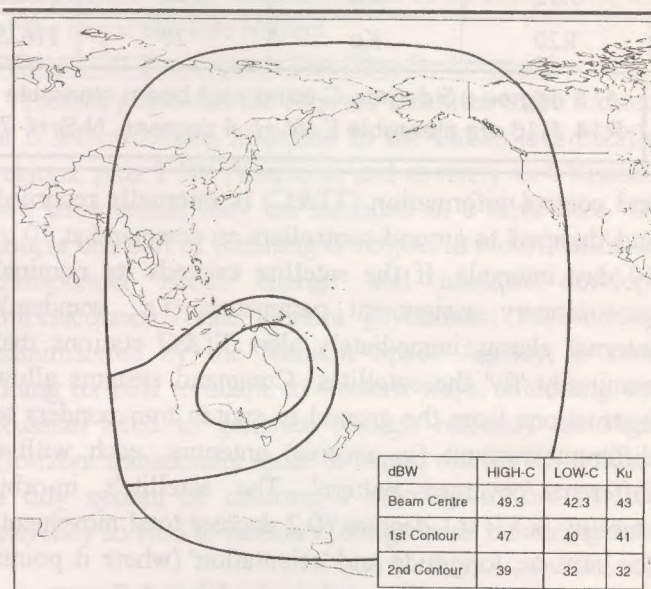
✓ Ku band contours, even though spot beam, at 43 dBw are in the 1m dish size range at centre.

Status of Express

The first operational Express went to 14W for service primarily to Europe in February. There are problems: Europeans report two of the C-band transponders, 1 Ku have either quit or are erratic. Russian sources and Rimsat confirm the Express launch schedule is currently



RIMSAT Express 170.75E: New Zealand spot beam



RIMSAT Express 170.75E: Australia spot beam

on hold while engineers sort out the data looking for a cause of the failures. Most expect the launching to resume in the 3rd or 4th quarter this year. The GE Americom leased satellite (80E) and the Informcosmos at 96.5E are two early candidates. The first Rimsats, early in 1996 at the soonest, may for 85E and 134E although not necessarily in that order.

DON'T MISS THE BIG EVENT!

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South Pacific Region
Satellite & Cable Show

JANUARY 1996

Tues Wed Thur Fri Sat

23 24 25 26 27

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- Beginner course 24th
- General Sessions 25-26
- Public Exhibit 27th

Speakers from Asia, North America, the Pacific

PLAN **NOW** TO ATTEND!

ADDING SATELLITE CHANNELS TO A MASTER ANTENNA SYSTEM

Editor's Note: This series deals with the technical changes required in an existing MATV (master antenna television) system when adding one or more satellite delivered programme channels. Parts one and two in SF#8 and 9 dealt with channel allocation and how you create "room" within the spectrum tuned by the standard TV set for additional (satellite) channels.

Review

Television receivers connected to a properly designed coaxial cable distribution system can display quality pictures and sound from TV programmes carried within the system on 'adjacent channels' (SF#8, p.11). An adjacent channel situation exists when two or more TV channels occupy frequencies which are sequential in the spectrum. Under normal terrestrial broadcasting rules, adjacent TV channels are avoided for a host of technical factors as explained in SF#8 and 9. In a coaxial cable (MATV, SMATV, CATV) system these 'factors' are within the control of the system designer / installer. This immediately opens up for master antenna TV system use channels which previously were 'forbidden' when the MATV system was reticulating only broadcast TV programming. We explored how the system designer controls these factors in SF#9, p. 5.

You Control The Spectrum

Within the mini-world contained inside of the coaxial cable network serving the hotel, motel or apartment complex, the system designer is in charge. Every signal carried by the cable network, and amplified by the system amplifiers, is placed inside of the network by the system designer. If the system is planned properly, no outside signals will 'ingress' (penetrate into) the system.

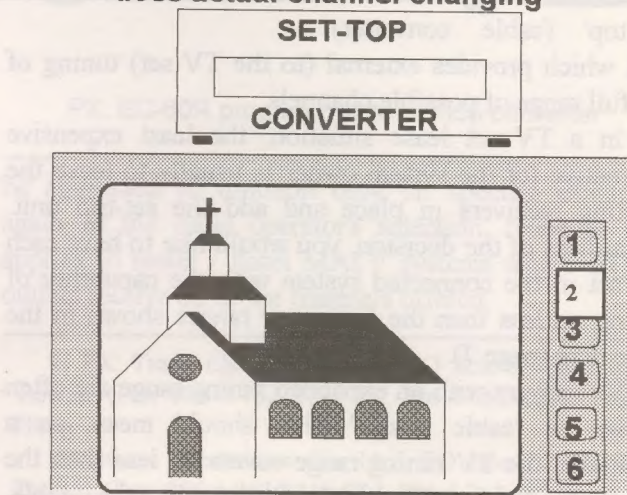
By being in charge of the signal frequencies, and the power or signal level of each signal inside of the cable network, the designer has in his or her power the ability to ensure that each TV set connected to the system receives (a) just the right amount of signal, and, (b) a properly balanced set of signals such that each signal arrives at the TV set with the same signal level or power.

By following the engineering criteria that leads to this situation, the system designer is able to 'stack channels' one after the other to place one TV programme on each of the many dial positions the TV set has available.

Overflow

Unfortunately, many TV sets found in motels are (a) older versions designed at a time when equipping such

With converter, TV set remains tuned to single channel (such as 2) and converter does actual channel changing



receivers with 8 (or fewer) 'tuning channels' was thought ample, and, (b) not owned by the motel but on lease from a receiver distributor. The first factor limiting channel capacity within an MATV system, then, will be the tuning capability of the TV sets.

Before setting out to design the addition of TV channels to an existing MATV system, first determine the tuning capability of the TV sets. As we saw in SF#9 (p.5), it is possible to rearrange the local television transmission channels within the MATV system to create new adjacent channels for the added satellite signals.

DESIRABLE TUNING RANGE FOR TV SETS

Channel Numbers	Frequency Range
2 to 4	48.25 - 62.25 MHz
S93 to S95	69.25 - 83.25 MHz.
S3 to S10	119.25 - 168.25 MHz
5 to 12	175.25 - 224.25 MHz
S11 to S20	231.25 - 294.25 MHz
S21 to S38	303.25 - 439.25 MHz

A tuning capability of all of the above channels will provide 49 TV programme channels. Some TV sets tune only through S20 and do not tune S93-S95 which then leaves you with a 29 channel capability.

If the TV sets available have tuning limitations, the next step is to consider how to correct this. The options are:

a) Replace the TV sets with newer design receivers that have extended tuning capability;

b) Leave the TV sets in place and add to each a 'set-top' (cable converter) unit which provides external (to the TV set) tuning of the full range of possible channels.

In a TV set lease situation, the least expensive alternative for the system owner is usually to leave the existing receivers in place and add the set-top unit. Regardless of the decision, you would like to have each TV set in the connected system with the capability of tuning no less than the frequency ranges shown in the table here (page 7).

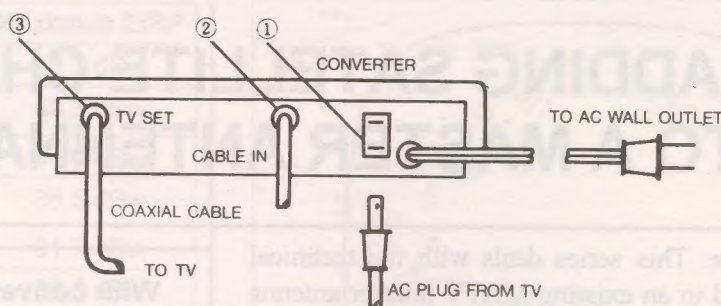
TV receivers with an expanded tuning range are often known as "cable ready." That should mean, as a minimum, the TV tuning range covers no less than the 29 (30) "basic channels" shown in the table. Additionally, the TV set should also be equipped with an "F" series aerial input connector (where the coaxial cable connects); not the more common [in the Pacific region] "Pal" or "European" fitting (see SF#, p.14).

Unfortunately for system planners TV sets imported into most South Pacific regions are not "cable ready" although a few will indeed tune the 29 (30) basic channels. And in at least New Zealand, some importers such as Sanyo New Zealand (Peter Huljich; tel 64-9-527-3908) are promising "cable ready" TV sets shortly after midyear.

What About UHF For Distribution?

The ultra high frequency channels (typically 500 - 800 MHz frequency range) offer an alternative to VHF regular plus S-channel signal carriage. But there can be significant problems with UHF distribution.

If the MATV system is sizeable and the headend 'power' is low, line amplifiers will be required within the distribution system. Line amplifiers, as we will see in the concluding segment of this series in July, require very careful placement and level setting to avoid signal degradation. Generally speaking, facilities with more than 30 TV set outlets and cable lengths (from headend to the furthest TV set) in excess of 100 metres require special skills and equipment for VHF plus UHF distribution. An additional problem with UHF distribution is the limitation of adding more and more



TYPICAL interfacing between set-top converter and TV set

channels (in the future) as the satellite programme sources grow. UHF 'line amplifiers' are 'channel capacity limited' and unlike their VHF counterparts you can easily run out of 'amplifier capacity' before you run out of 'channel space'. And finally, if the MATV system is ever likely to be integrated with a community wide cable TV system, the UHF distribution portion of the MATV system will be absolutely useless when the cable TV lines come to the MATV system to 'plug in' at some future date.

The Set-Top Converter

If the choice is for a set-top converter, to gain access through each TV outlet to the cable-only channels of the MATV system, there are a number of options. Set-top units have been generally available within the cable television industry for more than two-decades and they come in many technical designs.

The set-top is an external tuner. Some do not demodulate (turn the received signal into baseband audio and video) but rather act as straight forward frequency converters. Most come with their own infrared remote controls so the user can switch channels from the viewing position.

In the unit shown (page 9):

- 1) The TV set is tuned to 55.25 MHz and the converter feeds into the TV set on this frequency
- 2) Optionally, the TV set can be plugged into the converter receptacle so the on-off control on the converter remote also turns the TV on and off
- 3) The converter has scrolling (channel up, channel down) plus a favourite channel sub-memory (holding up to 10 channels) for instant access
- 4) Individual channels can be entered using the keyboard control
- 5) A sleep control timer to turn off the converter (set) up to 90 minutes after being set.

Sources and Pricing

Most set-top units are now manufactured in Taiwan or Korea. The unit shown here, the EC-60R, is from PX Cable Systems (1). Pricing varies upwards from US\$35

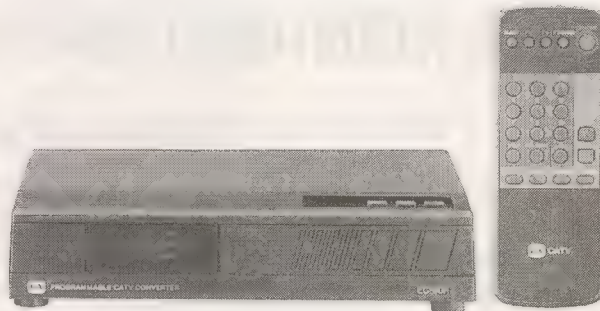
per converter. Some suppliers insist on minimum orders (1,000 is a common number but not always iron clad).

More Complex Converters

The original set-top units, similar to that shown here, were intended only to extend the tuning range of TV receivers. Then along came pay television channels; special programmes carried by cable TV systems.

Originally pay channels were merely additional channels carried on the cable system. The "security" (method by which the cable system kept the pay TV programmes from those not willing to pay for them) was initially to simply place the pay programming on channels not available to a non-paying home. This is done by building into the converter an ability to simply "block" (eliminate) one or more channels from non-pay-TV homes. As the cable company supplies the converter to the subscriber home, and the cable company knows how to "programme" the converters to eliminate specific channels, the cable company would be in control.

When set-top units became available at outlets such as Dick Smith, the cable companies had to step up their security system. Now the pay channels were encrypted. And set-top units now added descramblers which could

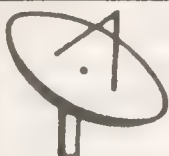


PX: EC-60R programmable set-top converter

be addressed to function only on specific channels; again, at the cable operator's selection. None of this applies to motel / hotel MATV systems where all TV outlets receive all of the channels offered.

1/ PX: Trans Electric Co. Ltd., PO Box 8, Changhua, Taiwan (Fax 886-4-7627018; Tel 886-4-7627131); Frank Hung.

2/ Jebsee Electronics Co. Ltd., PO Box 57, Tainan, Taiwan (Fax 886-6-263-8446; Tel 886-6-264-7622); S.K. Tsal



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THE NEIGHBOURHOOD CABLE TV SYSTEM

Make Money With Your Backyard Dish

Review

Cable operators make money by offering optional, in addition to free to air, television programme channels. In some areas, FTA reception is degraded because of local terrain or interference and the cable system also benefits by improving the FTA channels to eliminate the degradation. As we saw in part 3 of this series (SF#9, p.8), a cable system functioning in a marketplace (area to be served) with pre-existing good quality FTA reception can only expect to sell its service to approximately 10 (to 12)% of the potential homes passed by cable in the first year; rising to 21-25% at the end of the third year and 32-35% at the end of the 5th year.

At the present time the Pacific Ocean region is beginning to see a sizeable number of off-satellite channels which can be offered by a cable system and this is a new experience. Furthermore, with the January 1996 launch of Palapa C1 (which will cover most of the [south] Pacific region) and the launch of AsiaSat 2 with coverage to most locations west of the 180 degree meridian, the number of possible programming channels for cable will increase even further.

In Australia, the Galaxy programme package (see SF#9, p.2) is offered at A\$49.95 per month; 9 channels. The service is so new as to be not yet a benchmark to compare similar services elsewhere; and, is self-limited at this time by the distribution method (MMDS or point to point microwave) presently employed. In New Zealand, Sky Network began in May of 1990 offering 3 channels; the service is now 4-1/2 channels (the half channel being a shared channel with a non-pay TV service). This through-the-air distributed UHF (encrypted) service claims 21% of all potential homes now pay on average near NZ\$53.75 per month for this package.

Where there is existing multi-channel pay TV on offer, such as Australia and New Zealand, traditional cable TV operators will be compared in the potential subscriber's mind with the existing service, even in portions of Australia and New Zealand where the over the air pay services do not operate. In a single sentence, can you offer 5 to 9 channels off satellite, on cable, which the subscribers find enjoyable, for approximately A/NZ\$50 per month?

A Balancing Act

As we saw in SF#7 (p.5-8) there are two sizeable portions to the cable system:

1) The "headend", where all of the different channels are processed and mixed together for reticulation on the cable system wires, and,

2) The cable "plant" which is that collection of coaxial cable, passive splitters, amplifiers and subscriber signal tap-off devices that carries the programme channels from the headend to the subscriber's TV set(s).

In SF#7 we suggested a capital expenditure of around NZ\$47,000 would create a headend with 15 channels of service. We also suggested that a cable plant with the capacity to carry around 36 channels could be constructed under favourable conditions for around NZ\$7,500 per kilometre. In this portion we will concentrate on how rapidly the programme channels available to you as a "Neighbourhood Cable Operator" has grown from our March 1995 report. And suggest to you how this rapid growth effects your own viability to build a cable TV system in your own "neighbourhood."

Planning For Available Programming

While each issue of SatFACTS brings announcement of newly available, newly announced programming

Making Money With Your Dish?

If you are joining this series at midstream, this explanation. A dish system receives satellite signals. With two receivers you can receive two different programmes simultaneously; ten, ten different programmes. If you connect the receivers to a miniature cable TV system that loops around your neighbourhood, you have a new "revenue stream" (income source) by "selling" multiple-channel satellite-direct TV service to your neighbours. If you also happen to own and operate a motel with some presently expensive form of "pay-TV" which you subscribe to, you can cancel that subscription in favour of your own service. Confused? No need. If you wish access to parts 1-3, contact SatFACTS for reprints; NZ\$10 for the set from SatFACTS, PO Box 330,

Mangonui, Far North, New Zealand.

channels, not every channel on satellite may be desirable or available to you. A 'Porno-Flick' channel (see Coop's Technology Digest, May 31; p.14), for example, might be inadvisable in your community. Or ESPN, if you are in New Zealand or Australia, is simply "not available" because of pre-existing contracts with Sky and Optus. Likewise, a Japanese channel (NHK), although available FTA, would be a waste of valuable cable system channel space if you do not have a suitable Japanese speaking audience available, whether they be tourists or fulltime residents. Therefore each individual cable system's channel listing will be customised to the ethnic and economic base of the area served.

For discussion purposes here, let us assume a community with the following demographics:

1) A marketing centre for a rural region, outside of coverage by competitive (Sky or Galaxy) terrestrial pay TV services;

2) An average age slightly higher than the national average with more retired people than middle age, but offset by a equally large percentage of young families with children under 10 years of age;

3) An income level slightly below the national average but no local movie houses and a shortage of entertainment options outside of the typical pub and amateur athletics cultures;

4) The economy depends on tourism for 10% of its turn over each year;

5) 75% of the homes own a VCR, and the average family rents 1.3 videos each week (which is actually about the average nationwide).

Now let's take this scientific approach a step further and as a prospective cable operator you commission a sampling survey of the households in the area you wish to serve asking only, "Would you subscribe to (Sky) (Galaxy) at \$50 per month if it were available here?" And let's assume the results of this survey show 17% would subscribe, 14% think they would, and the rest are between "Don't know" and "No."

SOURCES: Programming Availability For Planning (*)

Satellite Dish Number	Satellite	Programme Service Name	Appeals to	Cost Per Cable Home Per Month
One	I180	WorldNet	News Junkie	Free
	I180	RFO	French	Free
Two	PAS-2	TNT/Cartoons	Young, Old	US\$1.
	PAS-2	NBC Super	Middle, older	US\$1.
	PAS-2	NBC ANBC	Businessman	(With Super)
	PAS-2	Asia Biz Net	Businessman	US\$.20
	PAS-2	CNN /1	Middle, older	US\$.50
	PAS-2	MTV Asia	10-30 years	US\$.30
	PAS-2	CMT	Country fans	US\$.30
	PAS-2	Family Net	20-60 years	US\$.30
	PAS-2	Discovery /1	Family	US\$.50
Three	PAS-2	CBS News /1	Middle, older	US\$.10
	PAS-2	NHK	Japanese	Free
	G2	ATN	Hindi Indians	Free
Four (2)	G2	EMTV	Family	Free
	AS2	Prime Sports	males 20+	Free
	AS2	Channel V	10-30 years	Free
	AS2	BBC World /1	middle, older	Free
	AS2	Star Plus	Family	Free
	AS2	Chinese Channel	Mandarin Families	Free
	AS2	Zee TV	Hindi Indians	Free
Five (3)	AS2	Deutsche Welle	German/English/Spanish	Free
	Palapa C1	Canal France International	French	Free
	Palapa C1	ATVI Australia	Family	Free
	Palapa C1	ABS/CBN	English (30%), Filipino	Free
	Palapa C1	Gold Network Australia	Family	Free

* / As of 1 June 1995; an update when appropriate.

1/ Some programming sources may not be available in all areas, depending upon pre-existing marketing contracts.

2/ AsiaSat 2 available west of 180 meridian; probable launch end of last quarter 1995, early 1996. Dish size required: 3m west of 170E, 3.8m between 170E & 180E.

3/ Palapa C1 available west of 170W; probable launch January 1996. Dish size required: 3m west of 180, 3.8m between 180(E) and 170W.

NOTES: There are 25 programming sources listed here of which the 10 that charge would currently cost the cable operator US\$4.20 per cable home per month if all were chosen for distribution.

What sort of cable TV programming lineup would you try to create for this example community? The satellite delivered listing on page 11 is a point for starting.

Would you carry all of these programme sources? Unlikely. Logic suggests, for example, that few systems in English speaking regions would require the French, Hindi, Mandarin or Japanese channels unless you are functioning in a community where tourism is high. And in that case, the type of tourists would effect which of these channels (even if free to air) you would carry. Remember that at the very least you will have to purchase a satellite receiver and a companion modulator for each programme source carried; NZ/A\$1,100 as a minimum. And you will be tying up some of your available spectrum space (a channel) as well.

Cable/SMATV rates per motel/hotel room or cable home are the current contract charges from the programmers (1).

Most cable systems will also carry the locally available terrestrial networks as well. That could be as few as two, as many as three, depending upon where

1/ "SPACE Membership Notes" newsletter (Vol. 1, No. 1; May 15, 1995) lists more than 30 separate programmer contacts for Pacific cable operators.



FILIPINO CHANNEL: Bi-lingual, available to cable

you are located. If you were to set up a cable system today and carry all of your terrestrial (local) signals plus all of the satellite channels available you would quickly be at the 30 channel point!

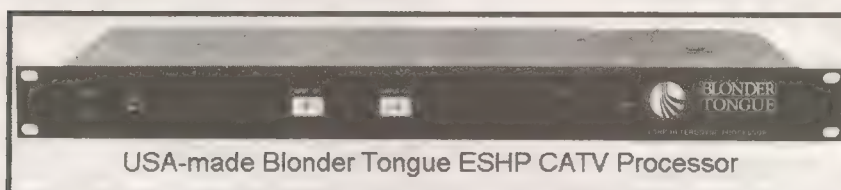
Returning to our market survey:

► There is a rule of thumb in cable system operations that you cannot have too much sports. In the page 11 list there is sports on RFO (5% of total, mostly weekends), EMTV (15% of total, mostly weekends and early mornings), Prime Sports (24 hours daily), Canal France International (5% of total) and NHK (5%).

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► There is another rule that you cannot have too many movies. Of the programme sources listed in the chart, only TNT (programmed for nighttime classic movies) offers a regular schedule. We'll discuss more 'current' movie programme sources, something you do not offer as a part of your "basic cable" package, in a subsequent issue.

► The third rule of thumb suggests you cannot have too many "family / children's channels." Here we have TNT's half-day companion 'The Cartoon Channel', The Family Net, Discovery, EMTV, Star Plus, ATVI (Australia) and Gold Network Australia.

► Last, you must have a news channel of some sort. CNN and BBC World are considered competitive, but in fact they compliment each other as their approaches to news coverage are totally different. Each will have its fans, and long term CNN will attract the larger audience although probably for shorter periods of time than the average BBC World viewer.

Once you are out of these general categories, virtually all programming is called "specialty" meaning it will appeal to typically less than 10% of the total population. The proper approach here is to have a balance of specialty channels. Specialty programme channels tend to have highly loyal viewers; if 5% of a market enjoys country music, you can be certain that your subscriber base with CMT on the cable will be disproportionately high in those C&W fan homes. Likewise, the appeal of the Asia Business Net, ANBC, and the ethnic channels. Of the ethnic channels, only ABS-CBN from the Philippines programmes enough English to make it bi-lingual; the balance will appeal because of their (infrequent) sports coverage or only to the ethnic group served by the programming language.

What successful cable operators attempt to achieve is a "balance" of programme mixes, realising that the attraction of cable is twofold:

1) That it has some special channel (such as CMT) which appeals to a small group of people fiercely loyal to "their" channel, and,

2) That it has some broader group of channels which appeal a medium percentage of the time to a larger audience base.

Cable service is akin to having a library video service that is constantly changing the books in stock. Each hour has a new programming mix that is always greater than the locally available FTA offerings. People may watch no more television, but at any point in time their choice of programmes is far greater than without cable. Cable viewers quickly learn to be "channel surfers," 'zapping' through their full channel line-up to sample everything that is there at each programming break and commercial interruption.

(Series continues SF#11)

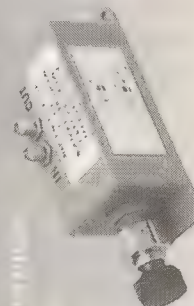
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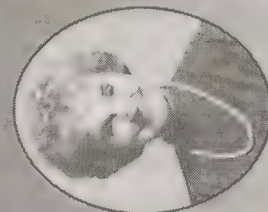


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the SATELLITE novice: Feeds

At The Focal Point

The satellite dish, parabolic of shape in design, is a totally passive device. Like a mirror with lightwave principles, the 'dish' proper is nothing more than a reflector capturing signal from the distant satellite and focusing the captured energy to a central focal point. The real antenna is at the feed, where the energy focuses.

A great deal is expected of a feed antenna:

1) It must scan ("see") only the reflector surface. It should not "see" beyond the edge of the reflector surface for if it does it will pick up not only the reflector collected signal but it will also pick up "noise" radiating from the ground behind the reflector. And noise is the enemy.

2) The feed must have the same polarisation as the incoming signal(s). There are four choices out there: Linear vertical, linear horizontal, right hand circular and left hand circular (SF#6, p.13). If your feed is designed or installed incorrectly for the polarisation of the signal you are trying to receive, your reception is degraded (to the point of no reception).

In selecting the correct feed for a dish first you must know (by calculation [above] or from the manufacturer's data sheet) something called the f/D ratio; the focal distance to the dish diameter. Arguments abound as to whether "shallow dish" or "deep dish" designs are best. What is not arguable is that if your dish is shallow, the feed had best be designed to optimise performance on a shallow dish. This relates to how the feed antenna "sees" the dish surface. A shallow dish (with an f/D in the range of .4 to .5) might be called "far sighted" as the feed is located further away from the dish centre than with a deep dish. And a "deep dish" (with an f/D in the range of .25 to .35) could be called "near sighted" as the feed is located closer to the dish surface.

A feed designed for a deep dish will see too much when it is placed on a shallow design dish; actually, it will look over the edges of the dish and see the noise of the ground beyond the edges of the dish (the noise of course degrades the performance of the antenna system). Conversely, a feed designed for a shallow dish if installed on a deep dish will see too little of the reflector surface and the gain of the antenna "system" will be degraded.

Feed manufacturers tell you in their literature sheets what type of dish each feed model is designed to function best with.

DISH CALCULATIONS

First: Find the focal length (if unknown) by taking the measured dish radius (1/2 of diameter) and squaring that number (multiply it by itself). Now measure the dish depth, and multiply by 4. Use the radius squared number and divide by the 4-times-depth number. This is the focal distance for the dish.

Second: Measure the diameter (twice the radius; from lip edge to opposite lip edge). Now divide the previously determined focal distance by the diameter. The number will be less than 1 (such as .35) and this is the f/D for the dish.

Orbitron 2, 2.5 and 3.6m dishes have an f/D of .36 or mid range. Their 3m and 4.9m are .3 f/D while their 6.1m has an f/D of .45 and certainly requires a carefully selected feed.

Paraclipse's Classic 10 Plus (3m) is .352, the Eclipse 3m is .30. The Classic 12 (3.8m) is .375, the Eclipse 12 is .333. And their Islander 4.5 and Classic 4.5 are .310.

How important is having just the right feed for an antenna? A feed designed for an f/D of .33 to .45 (such as the Chaparral Super Feed) will produce around 0.9 dB less signal on a dish calling for a feed of .30. Chaparral gives you two options here: A device called a "Golden Ring" attached to a .33 - .45 'standard' feed converts it to the f/D range of .28 to .33. Another option is a totally adjustable "Scalar" portion on the feed. On the Chaparral Polarotor I-E/A feed (which combines C-band feedhorn with their Polarotor I polarisation selection system) the installer can move the scalar ring portion in and out on the body of the feed horn to obtain peak response (gain).

The worst situation for mixing up feeds is when you have a shallow dish (f/D .45 to .5) and a feed designed to function with a deep dish. Here you will lose signal and the feed, by looking over the edges of the dish, will pickup earth noise along with the signal. This combination is likely to be more apparent on the screen (actual reception) than a signal level meter since the screen (picture) shows you the undesirable effects of mixing signal with earth noise (causing the pictures to be grainy or 'sparklie' even when the signal level seems adequate). The ADL brand of feeds are designed for dishes with an f/D of .335 to .425, or, in some cases they have adjustable scalar portions for optimising the f/D of the antenna system.

Polarisation Sense

In SF#6 we looked at why a feed designed for circular works very poorly on a linear satellite such as PAS-2. Basically, a circular feed receives an incoming signal that is round like a spiral (SF#6, p.13). A linear

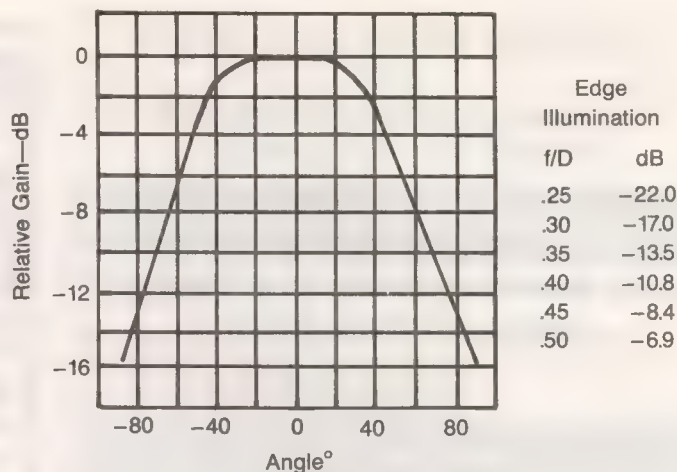
feed receives only up and down polarised (vertical) or left to right (horizontal) signals. There are elements of both up and down and left to right in a spiral (circle) so the circular feed simultaneously picks up both vertical and horizontal signals. As an example when you are trying to obtain peak reception on PAS-2 from ANBC on TR13V with a circular feed, the (digital) energy from The Filipino Channel on 14H appears as unwanted noise on the ANBC signal.

Correct polarisation matching is a must. If you wish only to "get by," the best choice would be a linear feed (switchable at your receiver from vertical to horizontal and back again) which will produce clean linear signals (without interference from the opposite polarisation, called "cross pole" interference). On circular polarised satellites (Intelsat and Rimsat) the linear feed will produce a 3dB (half power) signal but at least it will do so without cross pole interference. A circular feed, on the other hand, cannot be adjusted to eliminate cross pole interference and while it will function better on Rimsat and Intelsat, it will be a disaster for linear signals. Near-future satellites Palapa C1 and AsiaSat 2 will also be linear and thus a linear feed will grow in importance as additional satellites are launched.

Feed Centring

In a true parabolic dish the feed is positioned at the exact centre of the dish reflector surface a precise distance in front of the surface. The distance between the reflector centre and the edge of the feed nearest to the reflector surface is called the focal distance. When the feed is supported in front of the dish with one or more arms or braces, two adjustments are essential:

- 1) Finding the precise centre of the dish
- 2) Finding the correct focal distance.



A feed antenna has a "pattern" (plot of how sensitive it is to signals approaching it from the reflector surface at various angles away from 0; 0 being straight on from the centre of the dish). In the pattern plot above, a Chaparral Polarotor I feed pattern is plotted versus look angle. From a point +/- 30 degrees off the centre, the "gain" of the feed is flat (the top portion). It is half as sensitive (-3dB) at -40 and +40 degrees, 1/4th as sensitive (-6 dB) at -60 and +60 degrees. By mounting it on various f/D dishes from .25 to .50 the "edge illumination" (gain of the feed at the edge of the dish) varies as shown to the right of the graph. Ideally, the feed edge should be around -10dB.

Most dishes give you an adjustment to optimise the focal distance but the centring is often pre-designed into the feed support structure.

Being off-centre by 1" at C-band may cost you a signal loss of 1.5 dB (one-quarter signal) on a 3m dish. Being off-centre 1" on a Ku-band 1.5m dish can cost you 3dB (half of the available signal).

The correct focal distance is equally important and most dishes provide a limited amount of 'fine tuning' to allow peaking the received signal (using a spectrum analyser or receiver signal level meter). At C-band, being in too far 'in' or 'out' by 0.5" seldom costs you more than 1dB. At Ku-band you can find a 1dB difference by being as little as 1/8th inch off.

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SatFACTS June 1995 ♦ page 15

**A technical and marketing advisory
memo
to the membership from your industry
trade association group**

June 15, 1995

Patent Rights and MPEG

In the midst of all of the technical production reasons why consumer friendly, lower cost and mass produced digital video (MPEG) receivers have not yet come into production, we have a new deterrent. Patent rights.

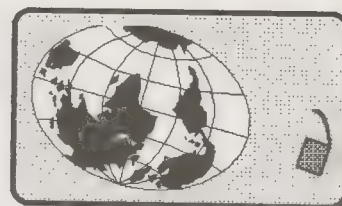
No one company and certainly no individual "discovered" MPEG. What began as digital video in its earliest form dates back to computer software digitising programmes developed more than a decade ago. The challenge, in getting from those early "digitising" days to the present full motion compression MPEG 'standard', has involved dozens of big companies, hundreds of smaller ones and thousands of individuals. Progress was painfully slow, literally in "bytes" at a time of computer software implemented by corresponding changes in hardware chips. In the final MPEG-2 format, there could be no identity as to "the author." And, most of what makes MPEG-2 work is actually computer language, or software in the trade.

After hundreds of individuals in dozens of prime companies had worked on the "software algorithms" there was a long line of MPEG-2 "inventors" each claiming they are entitled to share in the "royalties" for its use.

Two years ago, as MPEG-2 was being finalised, a special committee was formed to determine which engineers and which firms actually added something to

SPACE Pacific

**Satellite
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A trade association for users, designers, installers, sellers of satellite-direct TV systems in the POR

the final MPEG-2 format that was critical to its success.

This issue is on the way to being resolved although it may take another 9 months to finalise. In the meantime, those who believe they made contributions (whether they are ultimately determined to have done so) are demanding patent royalties from every firm producing MPEG-2 hardware. That's understandable. But there is more. These claimants are also demanding that every user of MPEG-2 (a user would be CMT or CTN) also pay a royalty for using their software programme.

Satellite programmers are funny people. They object to being told they must pay a percentage of their gross revenues to someone who claims they are using a system. They have never paid gross-revenue royalties for analogue; they dislike the concept of paying a percentage of their revenues just to use MPEG.

So satellite programmers, already faced with agonising delays from the hardware suppliers who are having difficulty getting MPEG-2 units into mass production, are basically saying "*If we don't have to go MPEG-2 at this time, we will wait a little longer.*" And the key issue, whether any portion of the MPEG-2 designer family can really collect a royalty from a satellite programmer using MPEG-2, may have to wait a court trial for final decision.

It is not a surprise, therefore, that more and more satellite programmers are selecting 'interim' analogue.

-AN INVITATION TO JOIN SPACE PACIFIC-

There is a category of membership for virtually every reader of SatFACTS; each membership class carries distinct privileges. A SPACE Membership explanation package is available at no charge and carries no obligation.

Membership classes are: Individual Member (for an individual owning a satellite dish for private viewing),

Installer-Dealer Member (those who sell, install and service satellite-direct systems), Retransmission Member (CATV/SMATV/Broadcaster), and, Importer/Manufacturer/Programmer Member (creator of satellite hardware, distributor of satellite hardware, creator-distributor of programming via satellite). Each membership category has an advisory committee made of up members to assist in the formulation of SPACE Pacific policy. The next (international) SPACE Conference will be January 23-27 in Auckland, NZ; see page 6 here. To query membership, see form on page 26.

Interim Benefits

Turner International's TNT / Cartoon Channel, delayed from an originally announced mid-April start, has elected NTSC B-MAC as an interim transmission scheme. Turner is handling the IRD (not a decoder but fully integrated receiver-decoder) units directly at US\$1300 each including shipping, taxes and duty. This will be the Scientific Atlanta 9708 unit which can be ordered (optional extra) with a "bypass option" (allows reception of FTA analogue) and will also accept (when available) a plug-in CDV (compressed digital video) MPEG unit (not yet priced but anticipated to be around US\$500 when available). This means there will be a single receiver capable of FTA and NTSC B-MAC video and MPEG video. TNT / Cartoons hopes to be on PAS-2 TR15V the week of June 19 (Angela West, Sydney, Tel. 61-2-957-5255; Fax 61-2-957-5161).

MTV's NTSC signal on TR3V announced the week of May 22nd it would remain FTA "until August" and then on the afternoon of June 1st turned on their NTSC B-MAC encoder. Why? There are two big reasons, many smaller ones:

1) MTV Mandarin, promoted to be a "soft" service with non-controversial videos, couldn't resist running big-name stars (Madonna) cavorting with barely covered private parts. In FTA, available to anyone with a dish, tens of thousands of dish owners in religiously sensitive countries (Malaysia, for example) rushed to oggle things they had never previously seen on their TV screens. MTV had two choices; encrypt early or be banned by legislation in irate government circles.

2) Taiwanese and Filipino cable system operators were 'stealing' the service by the hundreds, reluctant to pay for something they were getting free. The answer: Encode.

The good news is that MTV is available to motels, private clubs, hotels and cable systems anywhere in the Pacific through Satellite Management International, Sydney (Gillian Aitkin at 61-2-977-0188; Fax 61-2-977-0934) and the same S/A NTSC B-MAC model 9708 required for TNT / Cartoons will work for MTV as well.

Other

ESPN has pulled the plug on all DTH anyplace in the Pacific at this time. They will deal with hotels outside of New Zealand and Australia but the rates are stiff: US\$5 per room per month; minimums apply. For restaurants / bars, US\$100 per month. Contact Andy Scott, Director International Sales in Hong Kong at 852-2887-1199 (Fax 852-2887-0813).

Discovery has also stopped DTH authorisations, "for now," pending a study now underway of possible DTH "distributors" (tel. 852-2822-7188).

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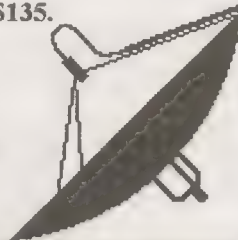
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Fax: 64-9-406-1083 • POB 30, Mangonui, Northland, NZ

SatFACTS June 1995 ♦ page 17

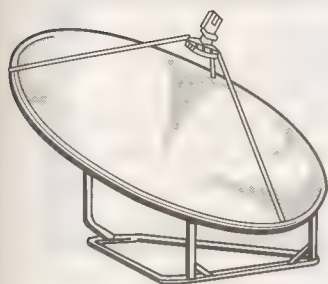
WHO TO CONTACT FOR SATELLITE PROGRAMMING APPROVAL/INFORMATION

Programmer	Format/Bird	Rates DTH / Cable	DTH	S-TV	C-TV	Contact	Fax Numbers
ANBC	fta Ntsc/P2	DTH?/US\$1 p/m (4)	?	Yes	Yes	Roger Wilson	852-2865-2231
As.Bus.News	SaMpeg/P2	US\$50py/US\$.20pm	Yes	Yes	Yes	Chris Wanden	65-323-0788
ATN	fta Pal/G2	None	Yes	Yes	Yes	P.K. Dixit	91-22-287-2753
Canal +	MPEG/I177	Not presently available	No	?	?	M. Van Ryswyck	687-265321
CBS TV Net	SaMpeg/P2	DTH?/US\$20py	?	Yes	Yes	Nell Donovan	1-212-975-7452
CCTV	SaMpeg/P2	Unknown	?	?	?	He Zongjiu	86-1851-5554
Chi.TV Net	SaMpeg/P2	US\$240py/Cable ?	Yes	?	?	K.F. Lau	852-2515-6521
CNN	fta/Ntsc/P2	Not yet announced (3)	Yes	Yes	Yes	Gwin Scott	61-2-957-5161
CMT	SaMpeg/P2	US\$50py/US\$.30pm	Yes	Yes	Yes	Selwyn Cathcart	64-6-355-2141
Deutsche W.	(1) / fta	None	Yes	Yes	Yes	Adelheid Lucus	49-221-389-3208
Discovery	PalB-M/P2	No DTH/US\$.50pm	No	?	Yes	Mark Lay	852-2810-8456
EM TV	fta Pal/G2	None	Yes	Yes	Yes	Geoff Kong	675-254450
Encore +/-	SaMpeg/P2	Not presently available	No	No	No	Michelle R. Sie	1-303-721-5415
ESPN	NtscB-M/P2	No DTH/US\$5.00pm	No	Yes	Yes	Andy Scott	852-2887-0813
Family Ch.	Unknown	Not yet announced	?	Yes	Yes	Richard Busgilio	1-804-459-6195
Filipino Ch.	GiMpeg/P2	US\$120py/Cable?	Yes	?	?	Gina Leviste	63-2924-2732
Galaxy	GiMpeg/B1	A\$600py/Cable?	No	?	?	Stan Gunn	61-2-325-7322
Learning Net	CliMpeg/P2	Fees per programme	Yes	No	No		1-303-484-0668
MTV	NtscB-M/P2	DTH?/US\$.30pm	?	Yes	Yes	Gillian Aitkin	61-2-977-0934
NHK	fta Ntsc/P2	None	No(6)	Yes	Yes		81-3-3374-5948
Un.Inv.Hld.	Mpeg/I174	Not presently available	No	?	?	Paul A. Barth	1-303-770-4207
RAJ	fta Pal/G1	None	Yes	Yes	Yes	Shankar Karikar	91-44-4910733
RFO	fta Pal/I180	None	No(7)	Yes /7	Yes /7	(8)	33-45-24-7198
STARnet	(2) / fta	None (5)	Yes	Yes	Yes	James Field	852-2532-1044
TNT/Cartrn.	NtscB-M/P2	US\$50py/US\$1pm	Yes	Yes	Yes	Angela West	61-2-957-5472
WorldNet	fta Pal / I180	None	Yes	Yes	Yes	USIA Office	Amer. Embassy

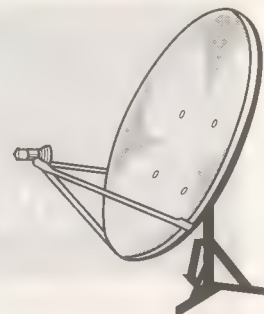
FOOTNOTES and GUIDE to DATA ABOVE

B1 / Optus B1 satellite (160.0E)
Cli / Compression Labs Inc. (MPEG format)
fta / Free to air (not encrypted)
GiMpeg / General Instrument MPEG (digital) format
I174 / Intelsat at 174E
I177 / Intelsat at 177E
I180 / Intelsat at 180E
Ntsc / (American) 525 line standard
P2 / PanAmSat PAS-2 (169E)
Pal / (European originated) 625 line standard
PalB-M / Pal format B-MAC analogue encryption
pm / fee per month
py / fee per year

1 / German based Deutsche Welle, broadcasting 2 hours daily in German, English and Spanish, presently available in fta on I180, will be 24 hours on AsiaSat 2.
2 / STARnet 5 / 6 channels fta to be available AsiaSat 2
3 / CNN will eventually encrypt but remains fta PAS-2
4 / \$1pm is for 2 channels: ANBC and NBC Super
5 / STARnet will have up to 30 pay TV channels in addition to 5 to 6 in fta
6 / NHK present service on PAS-2 includes announcement that transmissions are "Not for private viewing" and are intended for cable/ broadcast use.
7 / RFO plans MPEG format in future
8 / Send Fax only in French language; a French Embassy near you will also be of assistance



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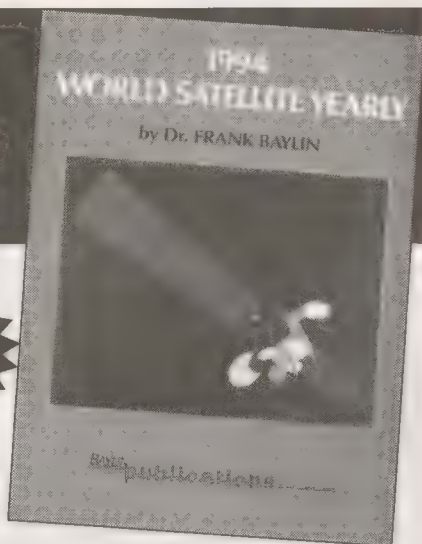
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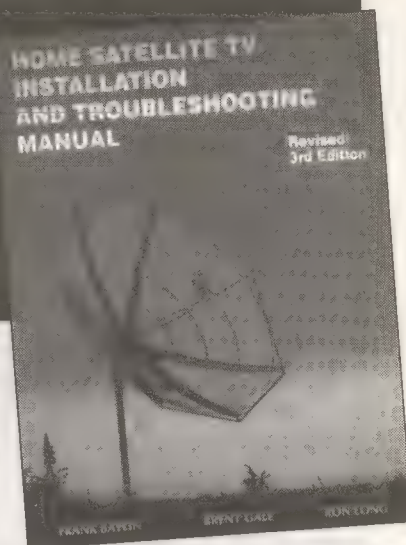
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WITH THE OBSERVERS

LAUNCH AHEAD

JCSAT-3 (Japan) launch of 12 transponder C + 28 transponder Ku band satellite is due by 1 September to 128E. NZ, Australia (SE coast, Perth, Darwin) will be 43 dBw Ku. On C, NZ (25-26 dBw) and Australia (25-29 dBw). Hottest Ku is India: 45 dBw.

EMTV Survey

SF#9 contained a survey card asking observers throughout the Pacific Region to grade the 'quality' of EMTV video and audio. EMTV's uplink obtains their signal from an off-air pick-up, i.e., by receiving the signal after it has been broadcast through the air to local TV viewers. 92% of those completing the survey card graded EMTV's video quality as either "Fair" or "poor" with 97% saying they do notice a "graininess" (lack of distinct edges on objects telecast). And 70% of those responding said they "do not find EMTV sound acceptable." Virtually everyone reporting said the signal 'quality' is best when the receiver operates in a narrower (IF) bandwidth such as 18-22 MHz. Bottom line: If EMTV wishes to attract viewers outside of Papua New Guinea, they should correct this situation. Our thanks to the more than 50 readers who completed the survey card.

Rimsat G1 and G2 Changes

Several dozen reporters comment on the tests being conducted by RAJ-TV on G1 TR R6 wherein the original RAJ programming is reduced to 1/2 transponder bandwidth and a new programme channel (a movie service) is transmitted in the second half. Rimsat advises the tests show they can operate the transponder at full (75 watt) output power without "inter-mod" (degradation) with both programme channels present. This suggests, although Rimsat doesn't say so, that the 75 watt transponder has really been operating at less than full (75 watt) power all along.

Manila based ABC-5 (Associated Broadcasting Company), which carries a heavy lineup of US English language TV shows, has switched from analogue on G1, TR R8, to S/A MPEG; the first MPEG on a Rimsat. SF suggests you contact Engineer Ely Nankil (Fax 63-2-936-1551; Tel 63-2-936-2504) regarding getting authorised for reception if you live within the footprint (a Hemi beam service; see SF#9, p.2; does not reach further south than Northern Australia). Also on G1, Sun TV on TR10 (hemi) has stopped broadcasting and the transponder is back on the market at US\$1.2m per year (Tim Brewer at Rimsat; tel 63-47-252-6984 direct line).

Observer **Shane Wilson** (Mareeba via Cairns) reports of G1: "Perhaps the new up-links being employed from Singapore are 'driving' the satellite harder; in any event, most of the signals are now stronger. AsiaNet (IF: 1325) is the best. Sun



Tyrell Ruscoe (Wanganui, NZ) salvaged this 3m ex-Telecom dish for effective use on C and Ku

TV (IF: 1426) is advertising 7 movies, daily, for cable TV users. Money TV (TR R11) is now Sun TV Music (IF:1226), similar format to ATN on G2."

On G2 (142.5E), the EMTV loss of uplink (see SF#8, p.20) tracking now seems to be corrected. Shane Wilson reports that in addition to EM TV and ATN, the only other signal he can receive here is a weak JJAY-TV (IF: 1425).

Other Reports

David Pemberton (Muswellbrook, NSW) reports the PAS-2 China Beam NTSC service is detectable at his location (32.17S, 150.55E) on an IF of 1685 but he is using a wideband Ku LNB covering 10.95 to 12.75. Shane Wilson reports this same signal in Queensland with an IF of 1034 using a more typical 12.25-12.75 LNB. David also suggests that Gorizont 19 satellite (96.5E) users CCTV and AZ TV (TR R7) seem to have the same satellite tracking problem with their uplinks that

WITH THE OBSERVERS: Readers are encouraged to submit reports of the past 30 days observations using the Observer Reporting Form found at the top of page 25 here. Photographs of actual reception can be taken with any camera capable of adjustment to 1/15th of a second (PAL; 1/30th NTSC), F3.5 to 5. Use ASA100 speed film, hold camera very steady and observe your camera's minimum focal distance. Alternately, videotape (VHS, any speed, format) can be submitted to SF and we will take the photos. We also encourage photos of personnel and equipment for possible use. Material submitted cannot be directly acknowledged except by way of appearing here. At our deadline of each issue (see page 25 Observer card), reports may be faxed (64-9-406-1083).

Major Changes In Launch Schedules Announced

During the last 30 days several new variables have been introduced in the development of the Pacific / Indian ocean region satellite world by satellite operators and launch facilities. Prior to the announcements, the launch of AsiaSat 2 (to 100.5E) was scheduled for "third quarter 1995", the newest Palapa (C1) satellite was scheduled to 113E in November.

First, Indonesia's C1 satellite, originally scheduled to be launched by an Ariane rocket in November, will now be launched by an Atlas Lockheed Martin Atlas IAS from Cape Kennedy in January (1996). Palapa C2, originally scheduled for launch by Ariane in "third quarter" 1996, will now be launched in April to 118E. Both Palapas have heavy-duty Australia-(South) Pacific footprints on C-band (38dBw eastern Australia, 37dBw New Zealand, or dishes in the 2m size class). Additionally, both satellites expand C-band from 3.7-4.2 GHz to 3.4-4.2 which means more transponder room (see SF#3, p.3).

Next, two Filipino based companies have announced their intentions to build and launch C + Ku band satellites "by December 1996." Mabuhay Philippines Satellite Corp (MPSC), backed by the Philippine Long Distance Telephone Co., says it will launch a 30 C-band + 12 Ku band transponder satellite built by US corporation Loral and launched by a Chinese Long March rocket December 14 (1996). MPSC plans use of an Indonesian registered orbital spot but will not name which one at this time.

(The possibilities include [in order of likelihood]: 134E, 150.5E.) The MPSC announcement was followed in 24 hours by a similar announcement from Philippine Agila Satellite Inc. (PASI) that they, also, would launch a satellite "in December 1996" but admitting it has not secured an orbital position at this time. MPSC says they will be a "regional satellite system" serving a wide area of SE Asia and the Pacific while PASI says they plan only to serve the Philippines initially. In either event, the sky will be ever fuller of C and Ku band satellite signals.

EM TV first had with G2 in April. He notes, "The power levels are up and down during the day and they seem to lose the satellite." Shane Wilson adds that judging the quality of the CCTV service on Gorizont 19, he believes it, too, is fed from an 'off-air' uplink. Others he suggests may be similarly fed are TV3 and Antev on B2P.

STARnet's TR12V service on Palapa B2P, although intended for Indonesian viewers, is drawing some interest in Australia's northern Queensland and Northern Territory. STARnet receivers, pre-authorized (for an indefinite period of time) as they come out of the box for the Videocrypt encoded nighttime movie service, are now being distributed in small numbers inside of Australia. Under Australian (ABA) 'rules' pay television delivered to Australian viewers from sources outside of Australia (i.e., on any satellite other than Optus) is 'illegal' until after at least July 1997. However, while the more populous southeastern coastal areas now have access to Galaxy pay TV (SF#9, p.2), the more isolated inland and northern areas do not (and will not as long as Galaxy is confined to the Optus High Power beam). So for the moment, if the ABA really cares, it appears to be looking 'the other way' on this STARnet service being offered into Australia.

Similarly, the 'IndoVision' service (combining Discovery, ESPN, HBO) IRD units intended for Indonesia only are also

now 'somehow' getting into Australia's more northern regions. Unlike the STARnet service, the 'IndoVision' units require regular subscription payments and dealers in Australia participating in this activity report there are significant liaison problems with the Indonesian equipment (and authorisation) suppliers. Looking ahead, when all of these services move to Palapa C1 after their January 1996 launch, the same services will suddenly become available throughout all of Australia (plus New Zealand) on dishes in the 2m range.

Galaxy Update

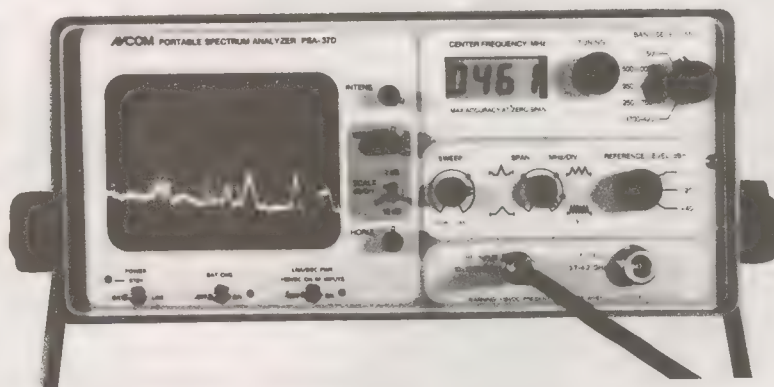
Optus B3, the latest and newest version which was successfully launched last August but has remained in 'storage orbit' at 151.7E, reportedly has been moved to A3's 155.9E location and as reported in Coop's Technology Digest (May 31) it is anticipated that Galaxy pay TV programming as well as other Optus users will be moving from B1 (160.0E) to B3 (155.9E) by or around 1 September. Optus B3 at 155.9E has a CW (continuous wave, unmodulated) beacon that will appear at 12.750 GHz (IF: 1450 MHz) and a receive system with a 2M or larger dish and spectrum analyser (Australia, NZ) should be able to detect it with no difficulty.

The exact start date for Galaxy DTH remains unannounced; subject to the move to B3 (if this report is accurate) and the arrival of the digiSTAR Australian version receivers from

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SatFACTS June 1995 ♦ page 21

PanAmSat PAS-2 UPDATE: To June 6, 1995

Turner's TNT / Cartoon has rescheduled launch date for "the week of June 19th" but that could still slip some. The format will be NTSC B-MAC although FTA service could precede the encryption for 30 days or more. SA model 9708 IRD units are being sold by Turner directly (Angela West, Tel 61-2-900-3111; Fax 61-2-957-5472) at US\$1300 duty, taxes and freight inclusive. DTH rates are US\$50 py, SMATV and cable US\$1 pm. The downlink frequency will now be 4152 MHz (IF: 998) in 1/2 transponder format, TR15V (same polarisation as ANBC). There will be 4 separate audio channels: 1 Left English, 1 Right Mandarin, 2L is Thai and 2R (reserved for) Japanese. MTV's Mandarin service, saying it would remain FTA "until August," suddenly went to B-MAC NTSC the afternoon of 1 June (see p.17 this issue). DTH policy is still being sorted but motels, hotels and cable can subscribe at US\$.30 per outlet per month through Gillian Aitkin in Sydney at Satellite Management International (Tel 61-2-977-0188; Fax 61-2-977-0934). The Family Channel's Rick Busciglio advises "We are still negotiating" (for transponder space) but they "hope to have a deal to launch later this year." The most likely scenario is that Family will appear in SA MPEG on TR1V along with CTN and CBS. They are likely to accept DTH as well as cable subscribers. The service is one of the widest seen, most popular cable services in North America (Fax 1-804-459-6423).

An Asian NTSC signal is operating on PAS-2 Ku vertical, as reported from northern Queensland (IF: 1034 MHz), American programming with sub-titles, possibly Korean. A search of PAS-2 with a spectrum analyser also reveals as many as 3 separate digital carriers present on Ku; the Asia Business News Ku PAL analogue feed 'test' may terminate by the time you read this.

PACE Electronics. Before Galaxy launches DTH, they will be changing out all of the existing GI Digicipher receivers with PACE digiSTARs and therein will be a clue as to the probable start date for Galaxy DTH. Logic suggests Galaxy will begin tests on B3 using NTL and DigiSTAR as soon as the uplink hardware is installed for B3, then begin distributing digiSTAR (professional) receivers to replace the GI Digicipher receivers now in use for the B1 Digicipher format service. As soon as we see MPEG signals on B3's High Power transponders (horizontal 9 through 15) that will be the first step towards the Digicipher to digiSTAR changeover. And once the commercial (MDS, hotel, club) users of Galaxy have been

converted to digiSTAR, the B1 Digicipher feeds will be shut down and Galaxy will begin getting serious about DTH using digiSTAR. The present Digicipher channelling scheme in use for (GI model) 310 AP and 1500 receivers is shown below.

Motels, hotels, SMATV and cable TV systems located throughout Australia qualify for a free 3.1m dish system as a gift from PanAmSat. The dish system, with C and Ku feeds and low phase noise LNBs, is intended as an incentive for facilities to receive and use one or more PAS-2 programme services. The package, with a value of more than A\$2,000, will cost the user only freight charges from Sydney. There is a written contract, some (not onerous) restrictions: Details from Richard Fleck of Global Vision (Tel 61-2-977-0188; Fax 61-2-251-8382).

Rimsat G2 inclined orbit. To minimise signal loss created by G2's inclined orbit, users should set-up (peak for maximum signal by adjusting elevation and azimuth) during 'zero crossing' times. The orbit loses (regresses) 3.27 minutes per day at this time. For the next 30 days, optimum times for adjusting fixed dishes will be:

June 15: 0415 and 1615 UTC

June 30: 0326 and 1526 UTC

July 15: 0303 and 1503 UTC

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SF Reference File: Inside Galaxy Digicipher

TR #	IF	Service	Multiplex Channel	Digicipher Channel
10H	1,075.5	CNBC	I0	0
10H	1,075.5	PASS	I1	1
10H	1,075.5	TV1	I2	2
10H	1,075.5	PSN	Q0	5
10H	1,075.5	Showtime	Q1	6
10H	1,075.5	Tests (1)	Q2	7
11H	1,138.5	Quest	I0	0
11H	1,138.5	Arena	I1	1
11H	1,138.5	Max	I2	2
11H	1,138.5	Red	Q0	5
11H	1,138.5	Encore	Q1	6
11H	1,138.5	Tests	Q2	7

1/ Unmodulated NTSC carrier, TV Italia, test bars from time to time

PROGRAMMING TRENDS

An observer with a 3m backyard satellite dish in New Zealand has access to more than 30 "satellite channels" if the dish is equipped with the correct feed (linear vertical, horizontal plus circular left and right), an adjustable receiver IF bandwidth, standards conversion (for NTSC and SECAM) and a polar mount or horizon to horizon dish drive. Australians are even more fortunate and those in WA 'see' up to 10 additional satellites which NZ and eastern Australia miss.

Unfortunately there is nothing like a "Satellite TV Programme Guide" for this incredible array of channels and even channel lists for the more difficult to receive services are elusive. Knowing where and when to 'look' is the challenge. One man has set out to do something about this: It is his 'job'. Brian Oliver at the University of Auckland UniSat (Project; SF#6, p.2), using the University's 7.3m horizon to horizon dish and the best in electronics, routinely scans the skies for up to 24 hours per day, 7 days a week. Oliver is creating a massive data base of all (available in Auckland) satellites between 100E and 125W. The University in turn is gaining access to hundreds of non-English direct broadcast news and feature reports which are being used by foreign language, economics and cultural studies departments. Oliver is interested in exchanging raw transponder and programming data with others in the Pacific and welcomes your queries at (Fax) 64-9-373-7069. Moreover, if you have an e-mail address, Oliver will be pleased to add you to his weekly Unisat programming resource publication; currently the most comprehensive listing of which transponders carry news and other non-entertainment programming available today in the Pacific. Oh yes, by attending the

SPACE Pacific South Pacific Region Satellite and Cable Show January 23-27, you will have an opportunity to tour the University's Unisat station and witness operation of the 7.3m dish first hand; less than 150metres from the 'Show' meeting halls!

ASIA BUSINESS NEWS: Weekday Prime Schedule

NZ Time	Programme	Description
10AM	Breakfast Briefing	Headlines
10:30	Wall Street Journal: On Air	Insights current financial news
11AM	Breakfast Briefing	Headlines
12 noon	Trading Updates	Financial trends
4PM	Money Talks	Insider Tips
4:30	Far East Economic Review	Trade issues shaping Asia
5PM	Trading Updates	Financial trends
9PM	Asian Market Digest	In-depth analysis: Winners, losers
9:30	Ya Zhou Cai Jing Xun Xi	Mandarin wrap up of day's events
10PM	World Market	Markets outlook
10:30	Asian Market Digest	In-depth analysis: Winners, losers
11PM	Wall Street Journal: On Air	Insights current financial news
11:30	Ya Zhou Cai Jing Xun Xi	Mandarin wrap up of day's events
12 mid	Money Talks	Insider tips
1AM	Far East Review	Economic news
Service closes down 4AM NZT weekdays		

FRONT COVER FOLLOW-UP



To satisfy himself that the PAS-2 Ku signal into Alice Springs was as strong as he believed it to be, Les Brooks (see front cover, p.1) used the 35cm UK origin 'Marco Polo' era dish to produce the Asia Business News reception shown here (right). A portion of the Brooks' antenna farm (left).



SatFACTS PACIFIC OCEAN ORBIT WATCH: 15 June 1995

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TR#	IF freq	Gz25/103	G1/130	Gz18/140	G2/142	Gz21/144	P169/Vt	P169/Hz	I180	Pattern
R6/L-1	1,475	DubITV	RAJ(X2)	DubITV	ATN	DubITV				
1	1,430								Keystn	westH/29
R7	1,425	Muslim	SunMovies		JJAY					
1-2	1406/1425						CMT/CBS/4	ABN/CCTW/CTN/4		
3	1,385								VDP	westH/29
R8	1,375		ABC-5/d		Cell Fone					
3-4	1346/1372						MTV/b	Discov/b		
R9	1,325		AsiaNet		Eagle					
6	1,310								KDD/e	westH/29
6A	1,305									
5-6	1288/1300						ESPN/b	OccVid		
R10	1,275		(vacant)		EMTV	DubITV			NBCvdp	westH/26
10	1,256								Keyston	westH/26
7-8	1235/1249						PAS-2	Tests		
R11	1,225		SunMusic		Udaya					
12	1,220									
14	1,175								CBS/1	westH/26
9-10	1161/1183						Prime d	CNN(X2)	WNet	westH/29
16	1,135									
11-12	1110/1115								NHK/1	westH/25
18	1,105								RFO	G/29
13-14	1038/1060						ANBC	FilCh/d		
22	1,015								A9/b/c/e	G/25
15-16	985/985						TNT/Cart	Data		
23	984								NZ/d/c	G/22
23A	973									
24	962								TVNZ	G/22

JUNE 1995 NOTES:
 /b is B-MAC (NTSC or PAL)
 /d is digital
 /c indicates some programming is free to air
 e/ indicates two programmes are on transponder, 1 in LHC and 1 in RHC at times
 EMTV indicates programming is free to air (FTA)
 VDP indicates videoplex (two video signals, in NTSC format, requiring vidiplex signal separator for proper viewing)
 westH indicates western hemispheric beam
 G/ indicates global beam
 PAS-2 indicates reception on 3m or smaller dish in most areas
 MTV/b Indicates subscriptions are available (see page 18, this issue)

Ku BAND ACTIVITY UPDATE

A3B1TR	IF Freq	A3/B3:155.9E	B1: 160E	PAS2	IF Freq	Coverage Beam	Service Report
1(V)	977		TAB radio, data	1H	981	China 1	
5L(V)	1,193	ETV:>0000UTC	Occ. Video, news	2V	981	NZ/Australia	
5U(V)	1,218.8		Occ. Video	4V	1,041	NE Asia	1034: Korean
7L(V)	1,344	NHK:>1200UTC	ABC National	6V	1,101	NZ/Australia	occ. video
7U(V)	1,370		SBS National	7H	1,166	Ch.2 or NZ/Aus	
10(H)	1,075.75	B1: Digicipher, Ch. 0,2,5,6,(7)		8V	1,166	NE Asia	
11(H)	1,138.5	B1: Digicipher, Ch. 0,1,2,5,6,(7)		10V	1,231	NZ/Australia	
				11H	1,291	Ch.2 or NZ/Aus	
				14V	1,351	NZ/Australia	occ. video
				15H	1,416	Ch.2 or NZ/Aus	
				16V	1,416	NE Asia	

Ku band data courtesy Robin Colquhoun, Francis Kosmalski (Auckland), Shane Wilson (Mareeba), David Pemberton (Muswellbrook) and others. For PAS-2 update see page 22 in this issue. To contact programmers, see page 18. Galaxy B1 (TR10/11H) service presently GI Digicipher 1 format.

SatFACTS JUNE 1995 POR OBSERVER REPORTING FORM

(Please FAX [64-9-406-1083] or mail to arrive by 03 July)

TELL US what you are seeing, or using for equipment, that is new within the last 30 days. Observer reports (see "With The Observers" page 20) form an important part of the growing body of information we all share monthly.

- NEW programming sources seen since 1 June: (Please list receiver 'TF' or satellite transponder number if known)

- CHANGES in reception quality since 1 June:

- EQUIPMENT changes at my observing terminal since 1 June:

1308 CTR - 35 MHz Wide Rik - Lowland Tini Frank - 4th CTR

My Name _____ Address _____
Town / City _____ Country _____ (Please turn form over)

ENTER AIRMAIL SUBSCRIPTION to SatFACTS HERE

for direct airmail service to you!

- ☐ Enter my 12 month subscription to SatFACTS Monthly starting with July 1995 issue. My NZ\$40 (within New Zealand), US\$40 (outside of New Zealand) is enclosed.

NAME _____

COMPANY (if applies) _____

ADDRESS _____

TOWN / CITY _____ COUNTRY _____

Payment and card to: SatFACTS, PO Box 330, Mangonui, Far North (New Zealand)

SatFACTS DATA SHOPPE ORDER FORM

I wish to order the following reference materials (see cover page 3 - next full page - for descriptions):

- ☐ The WORLD of SATELLITE TV (NZ\$30 inside NZ; NZ\$35 elsewhere).
- ☐ TB9402 / MATV (NZ\$20; SPACE Members \$15).
- ☐ TB9404 / Home Satellite (NZ\$20; SPACE Members \$15).
- ☐ TB9405 / Commercial Satellite (NZ\$20; SPACE \$15).
- ☐ ALL THREE / TB9402, 9404, 9405 (NZ\$40; SPACE \$30)
- ☐ Coop's Satellite Operations (NZ\$30; SPACE \$20).
- ☐ Gibson Navigator (NZ\$30; SPACE \$20).
- ☐ Coop's Basic - Fine Tuning (NZ\$30; SPACE \$20).
- ☐ ALL THREE / OPERATIONS, NAVIGATOR, BASIC (NZ\$70; SPACE Members \$50).
- ☐ CTD 9412 / StarNET Wants To Put You in Cable TV (NZ\$30; SPACE Members \$20)
- ☐ CTD 9503 / Copyright As It Applies to Satellite Reception (NZ\$30; SPACE Members \$20)
- ☐ CTD 9504 / GALAXY: The Inside Story (NZ\$30; SPACE Members \$20)

Instructions:

- ☒ Check off items you wish airmailed to you
- Make cheque to Far North Cablevision Ltd.
- Complete reverse side of card

■ YOUR equipment survey:

Size dish(es): _____; Noise Temp LNB(s): _____

Make/model receiver(s): _____

Make/model standards conversion: _____

■ Friends with dishes (Will be sent literature explaining SPACE):

If mailing, to: SatFACTS Observers, PO Box 330, Mangonui, Far North, New Zealand

SatFACTS June 1995 SURVEY OF TNT RECEPTION

TNT / Cartoon Channel is scheduled to launch sometime after June 19th on PAS-2, transponder 15V (same polarisation as ANBC); 4152 MHz (IF: 998) in 1/2 transponder format. Your report will help us 'plot' the coverage of TNT throughout the Pacific.

TNT reception here is: ☐ As good as ANBC; ☐ As good as CNN; ☐ Worse than both

I rate the reception: ☐ Excellent; ☐ Good; ☐ Fair; ☐ Poor

My satellite antenna size is: _____

My satellite receiver is a _____ operated at a bandwidth of _____ MHz

My Name _____

Address _____

Town/City _____

Please return immediately after first receiving signal, to:

TNT / Cartoon Survey

PO Box 330, Mangonui, Far North, NZ

(Fax: 64-9-406-1083)

Instructions to Order from SatFACTS Data Shoppe:

- From anyplace in world: Enclose payment in NZ\$, or, in US\$ at rate of

\$1NZ = 64 cents US (total in NZ\$, multiply by .64) to

Far North Cablevision Ltd., PO Box 330, Mangonui, Far North, New Zealand

- Complete your own ship-to information below.

Total amount of order (add items ordered on reverse side of this card): NZ\$ _____

(If paying in US\$, multiply .64 times NZ\$ number for total)

Ship to:

Name _____

Address _____

Town / City _____ Country _____

IF Member of **SPACE Pacific**: Your membership Number (found on membership certificate, line 4:) _____

SatFACTS DATA SHOPPE

YOUR Source For Reference, Study Materials In The World Of Satellite TV

ENTRY LEVEL:

☐ **The WORLD of SATELLITE TV** (Asia Pacific edition) by Mark Long and Jeffrey Keating. The ideal "starter" manual for someone entering the field of satellite television. How the system works, what the parts do, how they all fit together. 226 high quality, well illustrated pages. Ease of comprehension plus excellent detail. Price: NZ\$30 within NZ, NZ\$35 elsewhere. Note: Limited copies remain in stock, these will surely sell out this month (We hope)!

☐ **TB9402 / MATV: Master Antenna Television Systems**. How to plan, select equipment for and install multiple outlet systems for motels, hotels, apartment flats and condos. Practical step by step guidance. Price: NZ\$20 world-wide.

☐ **TB9404 / Home Satellite Systems**. What the parts are, how they go together for POR home TVRO systems; how you create a working system with maximum performance at minimum outlay. Price: NZ\$20 world-wide.

☐ **TB9405 / Commercial Satellite Dish Systems (SMATV)**. If you are building a system from scratch, also order TB9402 for the MATV portion basics. If you are rebuilding an existing MATV system to add satellite signals, you need this! Price: NZ\$20 world-wide.

■ ALL 3 (TB9402, 9404, 9405) as a package for NZ\$40 (you save \$20).

DISH OWNING ENTHUSIAST LEVEL:

☐ **Coop's Satellite Operations Manual**. Originally written 1980, this manual explains how you locate and interpret the multitude of wide and narrow band signals available via satellite. Dozens of fun, new ways to get more from your dish system. Price: NZ\$30 world-wide.

☐ **Gibson Satellite Navigator** (O/w 1980). The mechanics of the Clarke Orbit Belt, how a dish tracking system is designed and operated to allow full horizon to horizon reception with a motorised dish system. Very practical, very hands on with plenty of do-it-yourself instruction for inexpensive systems. Price: NZ\$30 world-wide.

☐ **Coop's Basic Manual on Fine Tuning Satellite Terminals** (O/w 1980). The little things such as feeds, connectors, powering. Tips from the people who started home dish reception in the 1970s, building the foundation for the present TVRO industry day by day, discovery by discovery. Very practical, very hands on. Price: NZ\$30 world-wide.

■ ALL 3 (Two from Coop, one Gibson) as a package for NZ\$70 (you save \$20).

BUSINESS MANAGEMENT REFERENCE MATERIAL:

☐ **CTD 9412 / StarNET TV Wants To Put You In The Cable TV Business**. When AsiaSat 2 is launched in mid year, StarNET's 7 free to air (plus 35 pay TV) services are designed to make you a cable TV operator. Price: NZ\$30 world-wide.

☐ **CTD 9503 / COPYRIGHT - How It Works, Your Liabilities**. Must reading for anyone planning to distribute satellite programming to motels, hotels, communities. Price: NZ\$30 world-wide.

☐ **CTD 9504/ GALAXY**- The detailed, inside story of what it is, where it wants to go. If your appetite to understand Galaxy is whetted by our 3 page report in this issue of SatFACTS, this detailed analysis (issued April 28th) is for you. Price: NZ\$30 world-wide.

TO ORDER - USE BOTTOM CARD PORTION TO LEFT

When they wanted Cable Television throughout Europe, Asia and America they called the man from Maser.



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